

REMARKS

Reconsideration and allowance of the present patent application based on the foregoing amendments and following remarks are respectfully requested.

By this Amendment, claim 1 is amended. Support for the amendment to claim 1 may be found, for example, in FIG. 1 and on pages 6 and 7 of the specification. No new matter has been added. After entry of this Amendment, claims 1 and 2 will remain pending in the patent application.

Claims 1 and 2 were rejected under 35 U.S.C. §103(a) based on Koike *et al.* (U.S. Pat. No. 5,629,056) (hereinafter "Koike") in view of Takamatsu *et al.* (U.S. Pat. 4,593,977) (hereinafter "Takamatsu"). The rejection is respectfully traversed.

Claim 1 recites a liquid crystal display element wherein, *inter alia*, the first and second alignment films have surface energy of no less than 51 dyn/cm to prevent an image-sticking phenomenon caused by the liquid crystal composition and impurities contained in the resin layer of the circuit array substrate through the first alignment films and surface energy of no more than 60 dyn/cm to prevent white or black turbid spots caused by impurities contained in said liquid crystal component. Contrary to the Examiner's assertion, Koike does not teach or suggest this feature.

Koike discloses a liquid crystal display panel including two adjacent minute domains which are different from each other in pretilt angle in order to improve viewing angle characteristics. (See col. 4, lines 13-17, and col. 5, lines 28-34). Koike also discloses that the pretilt angle may be changed by (a) selective irradiation of the two domains, (b) selective change in concentration distribution of chemical components governing the pretilt angle of the surface of the first and second domain, and (c) selective heating of the first and second domain. (See col. 10, lines 28-38). Koike further discloses (referring to method (a)) that irradiation increases the surface energy, which in turn lowers the pretilt angle. (See col. 16, lines 1-9 and FIG. 18). Koike finally discloses (referring to method (b)) that by lowering the precuring temperature, the pretilt angle may be lowered. (See col. 20, lines 49-53).

Koike is, however, completely silent about alignment films that have surface energy of no less than 51 dyn/cm to prevent an image-sticking phenomenon caused by the liquid crystal composition and impurities contained in the resin layer of the circuit array substrate through the first alignment films and surface energy of no more than 60 dyn/cm to prevent white or black turbid spots caused by impurities contained in said liquid crystal component. In fact, Koike makes no mention of the image-sticking phenomenon or white or black turbid

spots, much less the possibility of adjusting the surface energy of the alignment films to reduce them.

Nonetheless, the Examiner contends that (1) prevention of image-sticking phenomenon and white or black turbid spots is the inherent result of the low pretilt angle with the corresponding high surface energy of the alignment layer as, allegedly, evidenced on page 7, lines 15-20, of Applicants' specification, and (2) Koike shows the area of interest of the claimed range. Applicants respectfully disagree and submit that Koike teaches away from the prevent invention.

First, Applicants respectfully submit that the cited portion of the specification does not include such evidence. Page 7, lines 15-20, of the specification teaches controlling the surface energy within the range from 51 to 60 dyn/cm to prevent defective display due to image-sticking phenomenon and white or black spots. The cited portion makes no mention of the pretilt angle. Furthermore, the Examiner is reminded that under MPEP §2112, "in relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." (Emphasis added in original.) The Examiner has, however, provided no basis in fact and/or technical reasoning to support the conclusion that the prevention of image-sticking phenomenon and white or black turbid spots are the inherent results of the low pretilt angle. Koike is completely silent as to preventing image-sticking phenomenon and white or black turbid spots. As mentioned previously, Koike is directed to a totally different subject matter.

Second, with respect to the Examiner's allegation on page 4, lines 9-12, that the graph of FIG. 18, in Koike, shows the area of interest of the claimed range, Applicants disagree and submit that Koike teaches away from such a range. All that is shown in FIG. 18 is that the pretilt angle decreases as a function of surface energy. There is absolutely no indication in Koike to select a particular range. FIG. 18 shows, for example, that a pretilt angle of 1 degree, or less, can be selected with a surface energy greater than 60 erg/cm², or that a pretilt angle greater than 10 degrees can be selected with a surface energy lower than 50 erg/cm². In other words, FIG. 18 just shows one way to select a pretilt angle. As mentioned previously, Koike discloses additional methods for changing the pretilt angle, *e.g.* selective change in concentration distribution of chemical components or selective heating. FIG. 18 is in no way indicative of a particular range of surface energy that ought to be used in the liquid crystal display.

Additionally, Applicants respectfully submit that Koike teaches away from the range of interest. Koike clearly teaches decreasing the pretilt angle. (See col. 16, lines 10-11). Koike even teaches that it is possible to obtain a pretilt angle of 1 degree, which according to FIG. 18 would correspond to a surface energy higher than 60 erg/cm². Because Koike teaches away from the range of interest, because there is absolutely no correlation between the pretilt angle and the prevention of image-sticking phenomenon and white or black turbid spots, and because Koike is completely silent about preventing image-sticking phenomenon and white or black turbid spots, Koike cannot, in any way, anticipate claim 1.

Takamatsu fails to remedy the deficiency of Koike. Takamatsu describes a multicolor liquid crystal display device including a color filter in a liquid crystal cell and comprising a layer of polyimide resin formed on the color filter for orientation of liquid crystal molecules. (See col. 1, lines 54-60). Takamatsu is, however, silent about first and second alignment films having surface energy of no less than 51 dyn/cm to prevent an image-sticking phenomenon caused by the liquid crystal composition and impurities contained in the resin layer of the circuit array substrate through the first alignment films and surface energy of no more than 60 dyn/cm to prevent white or black turbid spots caused by impurities contained in said liquid crystal component. In fact, Takamatsu makes no mention of surface energy. Therefore, any reasonable combination of Koike and Takamatsu cannot in any way result in the invention of claim 1. Therefore, claim 1 is allowable.

Claim 2 depends from claim 1 and is therefore patentable for at least the same reasons provided above related to claim 1 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 1 and 2 under 35 U.S.C. §103(a) based on Koike in view of Takamatsu are respectfully requested.

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The rejection having been addressed, Applicants request issuance of a notice of allowance indicating the allowability of all pending claims. If anything further is necessary to place the application in condition for allowance, Applicants request that the Examiner contact Applicants' undersigned representative at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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